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| EXAMINER MOFFAT, JONATHAN | | | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/706,608

Applicant(s)

MAERITZ, JORN

Examiner

JONATHAN MOFFAT

Art Unit

2863

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SE-08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

Applicant's amendments to the claims, filed 2/25/2008, are accepted and appreciated by the examiner. Applicant has amended claims 1 and 10-13. In response to applicant's amendments and the included arguments, all previous grounds for rejection are withdrawn and the following new **non-final** grounds for rejection are herein presented with respect to new prior art Kulkarni (US pat 5991699).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1.

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Whitefield (US pat 6512985) in view of Bone (US pat 6647309) and Kulkarni (US pat 5991699).

With respect to claim 1, Whitefield discloses a method comprising:

1) Receiving at least one process parameter from a sensor that monitors a process parameter of the manufacturing process while the plurality of physical objects is being manufactured (column 1, lines 27-30).

2) Automatically performing an analysis using values of the at least one process (column 1, lines 27-30).

3) Determining, based on the analysis, that at least one physical object of the plurality of physical objects does not satisfy a prescribed selection criterion (column 1, lines 45-49).

4) Marking the at least one physical object in such a way that the at least one marked physical object must be sent for a special measurement (column 1, lines 62-64).

With respect to claim 2, Whitefield discloses that the physical object is a wafer (column 1, line 21).

With respect to claim 3, Whitefield discloses that the analysis is a statistical analysis (column 1, lines 39-40).

With respect to claim 4, Whitefield discloses that the values of the at least one process parameter are measured when the plurality of physical objects is being manufactured (column 1, lines 11-13).

With respect to claim 5, Whitefield discloses sending the at least one marked physical object for a special measurement (column 1, lines 64-66).

With respect to claim 6, Whitefield discloses that the special measurement is a measurement for checking the quality of the at least one marked physical object (column 1, lines 64-66).

With respect to claim 7, Whitefield discloses continuing the manufacturing process for any of the plurality of physical objects not marked as failing the prescribed selection criterion (see Ref. 22).

With respect to claim 8, Whitefield discloses that the selection criterion is a quality characteristic of the manufacturing process (column 1, lines 16-20).

With respect to claim 9, Whitefield discloses that the selection criterion is not satisfied if a value & the at least one process parameter goes above or below a prescribed limit value (column 1, lines 50-55).

With respect to claim 10, Whitefield discloses an apparatus comprising:

1) a processor, the processor configured to cause the device to:
2) Receive at least one process parameter from a sensor that monitors a process parameter of a manufacturing process while the plurality of physical objects are being, manufactured (column 1 lines 27-30).

3) Perform an analysis using values of the at least one process parameter (column 1, lines 27-30).

4) Mark at least one physical object when, as a result of the analysis, the at least one physical object does not satisfy a prescribed selection criterion (column 1, lines 62- 64).

6) Send the at least one marked physical object for special treatments (column 1, lines 64-66).

With respect to claims 11-12, Whitefield discloses a method comprising:

1) Receiving at least one process parameter from a sensor that monitors a process parameter of the manufacturing process while the plurality of physical objects is being manufactured (column 1, lines 27-30).

2) Performing an analysis using values of the at least one process (column 1, lines 27-30).

3) Marking the at least one physical object in such a way that the at least one marked physical object must be sent for a special measurement (column 1, lines 62-64).

5) Sending the at least one marked physical object for special treatments (column 1, lines 64-66).

With respect to claim 1, Whitefield fails to disclose:

1) A sub-production installation of the manufacturing process measured while the plurality of physical objects is being manufactured..

2) Performing the process automatically.

5) Preventing values associated with the at least one marked physical object from affecting, a product quality measurement of the plurality of physical objects.

It would have been obvious to one skilled in the art at the time of the invention to automate the method. Merely using a computer to automate a known process does not by itself impart nonobviousness to the invention (limitation 2) above). See *In re Venner*, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958). See also *Dann v. Johnston*, 425 U.S. 219, 227-30, 189 USPQ 257, 261 (1976). See IV [PEP 2106. Despite this, the examiner presents the following teaching reference.

With respect to claim 10, Whitefield fails to disclose:

2) A sub-production installation of the manufacturing process measured while the plurality of physical objects is being manufactured..

5) preventing values associated with the at least one marked physical object from affecting, a product quality measurement of the plurality of physical objects.

With respect to claims 11-12, Whitefield fails to disclose:

1) A sub-production installation of the manufacturing process measured while the plurality of physical objects is being manufactured.

4) Preventing values associated with the at least one marked physical object from affecting, a product quality measurement of the plurality of physical objects.

Bone teaches, with respect to claims 1 and 11-12:

1) Measuring “process parameter values” (column 6 lines 10- 43; including stray gasses, environmental data etc) of a sub-production installation of the manufacturing process while the plurality of physical objects is being manufactured (column 6 lines 10-43) by an automated system (Fig 3).

Bone teaches, with respect to claim 10:

2) Measuring “process parameter values” (column 6 lines 10- 43; including stray gasses, environmental data etc) of a sub-production installation of the manufacturing process while the plurality of physical objects is being manufactured (column 6 lines 10-43) by an automated system (Fig 3).

It would have been obvious to one of ordinary skill in the art to modify the method and apparatus of Whitefield by additionally monitoring the parameters of the machinery itself and to perform automated, “during production” monitoring. As previously stated, automated manufacture and monitoring are obvious and well known in the prior art for reasons of cost, sterility, and reliability. Further, one of ordinary skill in the art would understand to also take interest in the behavior of the manufacturing equipment itself and understand that it has an effect on the finished product (Bone column 1 lines 23-57).

In combination, the wafers AND the manufacturing equipment parameters may be monitored and wafers may be marked for rework, additional measurements, and/or disposal based upon a fault in either set of conditions.

Kulkarni teaches, with respect to claims 1 and 10:

5) Preventing values associated with the at least one marked physical object from affecting, a product quality measurement of the plurality of physical objects (Figs 10a-e item 128 and column 9 line 65 - column 10 line 7 and column 10 lines 12-33).

Kulkarni teaches, with respect to claims 11-12:

4) Preventing values associated with the at least one marked physical object from affecting, a product quality measurement of the plurality of physical objects (Figs 10a-e item 128 and column 9 line 65 - column 10 line 7 and column 10 lines 12-33).

It would have been obvious to one of ordinary skill in the art to modify the method of Whitefield by excluding data from "bad" components or regions as taught by Kulkarni. As stated by Kulkarni (column 10 lines 1-7), this is a way to effectively determine the cause of systematic and recurring failures in wafer fabrication. One of ordinary skill in the art would find it obvious to apply the known method of determining mis-fabrication cause of Kulkarni to the similar manufacturing methods of Whitefield in order to achieve the same described benefits.

2.

Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Whitefield in view of Bone (US pat 6647309) and Kulkarni (US pat 5991699).

With respect to claim 13, Whitefield discloses performing an analysis using values of at least one process parameter of a manufacturing process of a plurality of physical objects (column 1, lines 27-30); determining that at least one physical object of the plurality of physical objects does not satisfy a prescribed selection criterion (column 1, lines 45-49); marking the at least one physical object in such a way that the at least one marked physical object must be sent for a special measurement (column 1, lines 62-64); and removing the at least one marked physical object from the manufacturing process (column 1, lines 64-66).

With respect to claim 14, Whitefield discloses performing an analysis using values of at least one process parameter of the manufacturing process of the plurality of physical objects (column 1, lines 27-30); marking at least one physical object when as a result of the analysis, the at least one physical object does not satisfy a prescribed selection criterion (column 1, lines 62-64); removing the at least one marked physical object form the manufacturing process (column 1, lines 64-66); and sending the at least one marked physical object for special treatments (column 1, lines 64-66).

With respect to claim 15, Whitefield discloses performing an analysis using values of at least one process parameter of the manufacturing process of the plurality of physical objects (column 1, lines 27-30); marking at least one physical object when, as a result of the analysis, the at least one physical object does not satisfy a prescribed selection criterion (column 1, lines 62-64); removing the at least one marked physical object form the manufacturing process (column

1, lines 64-66); and sending the at least one marked physical object for special treatments (column 1, lines 64-66).

With respect to claim 16, Whitefield discloses performing an analysis using values of at least one process parameter of the manufacturing process of the plurality of physical objects (column 1, lines 27-30); marking at least one physical object when, as a result of the analysis, the at least one physical object does not satisfy a prescribed selection criterion (column 1, lines 62-64); removing the at least one marked physical object from the manufacturing process (column 1, lines 64-66); and sending the at least one marked physical object for special treatments (column 1, lines 64-66).

With respect to claims 13-16, Whitefield fails to disclose preventing values associated with the at least one marked physical object from affecting an average product quality of the plurality of physical objects.

Kulkarni teaches, with respect to claims 13-16:

Preventing values associated with the at least one marked physical object from affecting, a product quality measurement of the plurality of physical objects (Figs. 10a-e item 128 and column 9 line 65 - column 10 line 7 and column 10 lines 12-33).

It would have been obvious to one of ordinary skill in the art to modify the method of Whitefield by excluding data from "bad" components or regions as taught by Kulkarni. As stated by Kulkarni (column 10 lines 1-7), this is a way to effectively determine the cause of systematic and recurring failures in wafer fabrication. One of ordinary skill in the art would find it obvious to apply the known method of determining mis-fabrication cause of Kulkarni to the similar manufacturing methods of Whitefield in order to achieve the same described benefits..

Bone teaches, with respect to claims 13-16, measuring “process parameter values” (column 6 lines 10- 43; including stray gasses, environmental data etc) while the plurality of physical objects is being manufactured (column 6 lines 10-43) by an automated system (Fig 3).

It would have been obvious to one of ordinary skill in the art to modify the method and apparatus of Whitefield by additionally monitoring the parameters of the machinery itself and to perform automated, “during production” monitoring. As previously stated, automated manufacture and monitoring are obvious and well known in the prior art for reasons of cost, sterility, and reliability. Further, one of ordinary skill in the art would understand to also take interest in the behavior of the manufacturing equipment itself and understand that it has an effect on the finished product (Bone column 1 lines 23-57).

In combination, the wafers AND the manufacturing equipment parameters may be monitored and wafers may be marked for rework, additional measurements, and/or disposal based upon a fault in either set of conditions.

Response to Arguments

Applicant’s arguments, filed 2/25/2008, with respect to the rejection(s) of claim(s) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Kulkarni (US pat 5991699).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JONATHAN MOFFAT whose telephone number is (571)272-2255. The examiner can normally be reached on Mon-Fri, from 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/jm/
JM
3/21/2008

/John E Barlow Jr./
Supervisory Patent Examiner, Art Unit
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